GEORGIA INSTITUTE OF TECHNOLOGY — OFFICE OF CONTRACT ADMINISTRATION

PROJECT ADMINISTRATION DATA SHEET

[X] ORIGINAL [ ] REVISION NO. _____

Project No. A-3309 DATE 8/9/82

Project Director: N. L. Faust ~~School~~/Lab EML

Sponsor: USA MERADCOM; Fort Belvoir, VA 22060

Type Agreement: Delivery Order No. E111 under BOA No. F33657-82-G-2083

Award Period: From 7/23/82 To ~~1/23/82~~ 5/23/83 (Performance) _____ (Reports)

Sponsor Amount: $63,466 Contracted through:

Cost Sharing: N/A GTRI/~~GTRI~~

Title: Field Support for FEED Hardware and Software

ADMINISTRATIVE DATA OCA Contact Linda H. Bowman X4820

1) Sponsor Technical Contact:

Mr. William J. Veigel
USA MERADCOM
Fort Belvoir, VA 22060

(703) 664-6591

2) Sponsor Admin/Contractual Matters:

ONR RR
Campus

881-4213

Defense Priority Rating: DMSReg 1 - C9 - e Security Classification: Unclassified

RESTRICTIONS

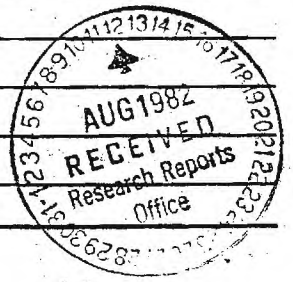
See Attached Gov't Supplemental Information Sheet for Additional Requirements.

Travel: Foreign travel must have prior approval – Contact OCA in each case. Domestic travel requires sponsor approval where total will exceed greater of $500 or 125% of approved proposal budget category.

Equipment: Title vests with Gov't

COMMENTS:

Advance Payment Pool agreement applies per mod to BOA and verbal confirmation with ONR RR.



COPIES TO: Research Administrative Network

~~Administrative Coordinator~~
Research Property Management
Accounting
Procurement/EES Supply Services
Research Security Services
~~Reports~~ Coordinator (OCA)
Legal Services (OCA)
Library
EES Public Relations (2)
Computer Input
Project File
Other GTRI

FORM OCA 4:781

GEORGIA INSTITUTE OF TECHNOLOGY OFFICE OF CONTRACT ADMINISTRATION

SPONSORED PROJECT TERMINATION/CLOSEOUT SHEET

Date February 9, 1984

Project No. A-3309 ~~School~~/Lab EML

Includes Subproject No.(s) _____

Project Director(s) Faust GTRI / ~~GIT~~

Sponsor USAMERADCOM, Ft. Belvoir, VA

Title Field Support for FEED Hardware & Software

Effective Completion Date: 5/23/83 (Performance) 5/23/83 (Reports)

Grant/Contract Closeout Actions Remaining:

- [ ] None
- [x] Final Invoice ~~or Final Fiscal Report~~
- [ ] Closing Documents
- [x] Final Report of Inventions
- [x] Govt. Property Inventory & Related Certificate
- [ ] Classified Material Certificate
- [x] Other Final Report to be delivered under A-3553

Continues Project No. _____ Continued by Project No. _____

COPIES TO:

Project Director
Research Administrative Network
Research Property Management
Accounting
Procurement/EES Supply Services
~~Research Security Services~~
Reports Coordinator (OCA)
Legal Services

Library
GTRI
Research Communications (2)
Project File
Other _____

Form OCA 60-1038

A-3309

Monthly Progress Report

Project A-3309

For

August, 1982

Submitted by
Nickolas L. Faust
Georgia Institute of Technology
Engineering Experiment Station
Atlanta, Georgia 30332

October 4, 1982

I. Technical Progress

During August work was concentrated on the evaluation of deficiencies in the FEED software as implemented on the ROLM 1602A. Three factors made this work very difficult:

1. No recent backup of the system was available.
2. The system was loaded with programs from three different backups due to read errors on several backup tapes. It was therefore difficult to ascertain what was the correct version to use.
3. There was no documentation of the system.

EES spent a great deal of time trying to unravel the puzzle as to which versions of the programs went together. The naming and loading convention inherited from IITRI made the task harder.

EES began corrections and updates to the programs to achieve a workable version of FEED. Almost all corrections made by EES to the FEED system in the last 12 months had been lost and EES proceeded to re-correct the programs.

Towards the end of August, a working version of the FEED system was achieved. It has only been tested in a limited way and there could easily be more bugs than will surface with more use.

II. Budget Expended

Personal Services	$5200
Fringe	930
Materials and Supplies	0
Travel	0
Overhead	2893
	$9023

A-3309

Monthly Progress Report

Project A-3309

For

September, 1982

Submitted By
Nickolas L. Faust
Georgia Institute of Technology
Engineering Experiment Station
Atlanta, Georgia 30332

October 4, 1982

I. Technical Progress

During September, the FEED van was made ready for travel back to ETL. A significant amount of work was done in early September, correcting bugs and finalizing the programs. Utility programs were implemented to screen for bad magnetic tapes and to read header records from 800 bpi DMA tapes. A procedure was derived whereby new DMA tapes ordered by ETL or Ft. Bragg would first be sent to Georgia Tech for reformatting into 800 bpi and for integration into the cell data base structure. The users at Ft. Bragg would then only have to perform one LOAD command to enter an entire database.

On 19 September, a trip was made to ETL to further correct some software bugs and implement some program changes.

II. Budget Expended

Personal Services	$5085
Fringe	880
Materials and Supplies	73
Travel	324
Overhead	3003
	$9365

A-32

Monthly Progress Report

Project A-3309

For

October, 1982

Submitted By
Nickolas L. Faust
Georgia Institute of Technology
Engineering Experiment Station
Atlanta, Georgia 30332

November 29, 1982

I. Technical Progress

During October EES made 2 trips to Fort Bragg to work on the FEED software. On October 6th, Nick Faust and Griff Jay worked on several problems associated with the military grid coordinate system and the 3D option. It was found that the FEED software as written does not accommodate zone transitions when a data base spans 2 zones. This problem does not often occur but when it does it is a severe constraint. The 3D option was recompiled and reloaded at this time and the option worked. The system still is a conglomeration of programs with many versions of the same program existing at the same time. This is very confusing, since the old versions are often almost indistinguishable from the new versions. The results of the FEED documentation project should clear up most of these problems. At the end of the documentation project only 1 version of each program should exist on the FEED system.

The trip on October 24 was designed to isolate a problem in the Versatec output of the contour package and to bring a preliminary version of the slope program to Bragg. We were unable to totally isolate the contour problem, because the system did not have all the Versatec plot package sources on the disk. The problem probably occurs in the contour package but the error that is generated is in the plotting software. We hope to have the FEED system at EES over New Year's to implement the results of the documentation project and to fix the contour problem.

II. Budget

	Total Budget	Total Expended	Total For Month	Total % Spent
Personal Services	$23,433	$12,081	$1,796	51%
Fringe	4,095	2,180	370	53%
Materials and Supplies	12,500	1,144	1,071	9%
Travel	3,000	946	622	31%
Overhead	20,438	7,718	1,821	38%
Total	$63,466	$24,068	$5,680	38%

Monthly Progress Report

Project A-3309

For

November, 1982

Submitted By
Nickolas L. Faust
Georgia Institute of Technology
Engineering Experiment Station
Atlanta, Georgia 30332

January 4, 1983

I. Technical Progress

During November, EES met with current problems with the FEED software and directions into which development and support would occur. One of the major topics was the loading of a data base for all of IRAN. There are currently over 60 1 degree by 1 degree quads of DMA data available for IRAN. This amount of data cannot be accommodated by the FEED system because of a disk space limitation and a header record limitation. All the programs in the FEED system assume a header record format in which a maximum of 18 cells may be specified in a given data base. To change this constrained header record format would require modifications to almost all of the FEED programs and subroutines. This would require a rewrite of the structure for handling all data files and probably should not be considered as a support of the existing software. As an alternative, EES agreed to develop programs that would allow subsampling of the DMA topo data to reduce the size problems and to provide for meshing of four subsampled cells into a new super cell with a dimension of 2 degrees by 2 degrees. This will temporarily solve the problem of large data sets at the expense of spatial resolution. Each individual cell could also be loaded for detailed analysis.

One of the four problems with the size of the data set is the amount of information that may be dumped on a nine track, 800 bit per inch magnetic tape, and then loaded onto the FEED system.

Problems of crossing zone boundaries with a FEED data base were also discussed.

II. Budget

	Total Budget	Total Expended	Month	Total %
Personal Services	$23,433	$13,419	$1,338	57
Fringe	4,095	2,419	239	59
Materials and Supplies	12,500	1,192	48	10
Travel	3,000	1,320	374	44
Overhead	26,438	8,662	944	42
Total	$63,466	$27,013	$2,944	42

Monthly Progress Report

Project A-3309

For

December, 1982

Submitted By
Nickolas L. Faust
Georgia Institute of Technology
Engineering Experiment Station
Atlanta, Georgia 30332

March 8, 1983

I. Technical Progress

During December the FEED Van was at EES for installation of the documented software. FEED support during this period was mainly assistance in the building of the new system disk and the integration of the software into an operational configuration. Also during December a letter documenting several defects in the FEED software was forwarded to ETL. Discussions were held during this period with ETL personnel on various map projection and boundary problems associated with geographically referenced data. EES is now in the process of developing new programs for loading a large number of cells of DMA data.

II. Budget

	Total	Expended	Month	% Spent
Personal Services	$23,433	$15,253	$1,834	65
Fringe Benefits	4,095	2,731	311	67
Materials and Supplies	12,500	1,365	173	11
Travel	3,000	1,320	0	44
Overhead	20,438	9,756	2,318	48
	$63,466	$30,424	$3,411.74	48

Monthly Progress Report

Project A-3309

For

January, 1983

Submitted By
Nickolas L. Faust
Georgia Institute of Technology
Engineering Experiment Station
Atlanta, Georgia 30332

March 8, 1983

I. Technical Progress

During January final adjustments were made to the documented FEED software and it was successfully installed in the van. A merged database consisting of subsampled DMA data was developed during December and January. This was to be loaded into the system before its departure. Unfortunately, the FEED tape drive malfunctioned, and a repair had to be ordered for the hardware before the database could be loaded. Since a winter storm was approaching, and the van was needed immediately at Ft. Bragg, the repair was slated to be accomplished at Ft. Bragg. When the hardware repair personnel inspected the system, it was found to have a defective head that had to be ordered from MILTOPE.

II. Budget

	Total	Expended	Month	% Spent
Personal Services	$23,433	$15,916	$ 663	68
Fringe Benefits	4,095	2,796	66	68
Materials and Supplies	12,500	1,957	592	16
Travel	3,000	1,320	0	44
Overhead	20,438	10,100	344	49
	$63,466	$32,089	$3,411.74	51

Monthly Progress Report

Project A-3309

For

February, 1983

Submitted By
Nickolas L. Faust
Georgia Institute of Technology
Engineering Experiment Station
Atlanta, Georgia 30332

April 1, 1983

I. Technical Progress

February was a very active month for FEED support. Preparations for the Gallant Knight exercise were being made and the FEED system was intended to be used heavily.

Hardware

Efforts were made to bring the FEED configuration up to specifications prior to the exercise. The magnetic tape head that was ordered in January was used to repair the MILTOPE tape drive. Several repair trips were necessary during February to align and make the tape drive operational. While the hardware repair personnel were at Fort Bragg, the Tektronix copier was fixed and several problems were fixed with the mil-spec Versatec printer/plotter.

Software and Data Preparation

During February a finalized version of a requested elevation data base was delivered to Fort Bragg. These data were subsampled to 15 second spacing to allow the data set to fit on a 800 bpi magnetic tape. Several programs had to be written on the Georgia Tech eclipse system to perform this data loading and subsampling. EES agreed to deliver listings of the programs to Fort Bragg so that they could use the programs on a different computer. EES also proposed to put the data loading programs directly on the FEED hardware - before the exercise.

A program to compute slope from the elevation data was also implemented at EES during this period, and this program also will be transferred to Fort Bragg.

EES participated in a review of the FEED usage at Fort Bragg and assisted ETL in an evaluation of the current use.

II. Budget

	Total	Expended	Month	%
Personal Services	$23,433	$18,569	$2,653	79%
Fringe Benefits	4,095	3,249	453	79%
Materials & Supplies	12,500	2,160	203	17%
Travel	3,000	2,267	947	75%
Overhead	20,438	11,690	1,590	57%
Total	$63,466	$37,936	$5,846	60%

REVISED

II. Budget

	Total	Expended	Month	%
Personal Services	$23,433	$15,253	$1,834	65%
Fringe Benefits	4,095	2,731	311	67%
Materials & Supplies	12,500	1,365	173	11%
Travel	3,000	1,320	0	44%
Overhead	20,438	9,756	1,094	48%
Total	$63,466	$30,424	$3,411.74	48%

REVISED

II. Budget

	Total	Expended	Month	%
Personal Services	$23,433	$15,916	$ 663	68%
Fringe Benefits	4,095	2,796	66	68%
Materials & Supplies	12,500	1,957	592	16%
Travel	3,000	1,320	0	44%
Overhead	20,438	10,100	344	49%
Total	$63,466	$32,089	$1,665	51%

Monthly Progress Report

Project A-3309

For

March, 1983

Submitted By
Nickolas L. Faust
Georgia Institute of Technology
Engineering Experiment Station
Atlanta, Georgia 30332

April 19, 1983

I. Technical Progress

Major problems with the FEED hardware were encountered during this period. Up until the moving of the FEED system to the field for the Gallant Knight exercise, the software and hardware were working and producing products.

After the system was delivered to the field site, a set of catastrophic events occurred. The initial motor generator system had fluctuating power which subsequently caused a failure in the disk controller power supply. EES responded with its maintenance personnel, and a new supply had to be ordered from ROLM Corporation. After the new supply had arrived, and another generator system was located to replace the initial system the power hookup with the new generator was attempted. Inadvertently, the FEED van was connected to 220V power by Army personnel. Since the total system was designed to work on 110V power, parts of the system were damaged. The disk controller was found to be unusable and immediate calls were made to the disk controller manufacturer and to ROLM Corporation, the FEED system integrator. The disk controller is no longer in production and AED could not provide a replacement controller. They possibly could repair the existing controller. Unfortunately this could not occur in time for the system to be used in the exercise. ROLM Corporation had a spare controller but were not sure that it was operational. ROLM agreed to lend the Army the AED controller to see if it would work in time to allow any participation in the field exercise. This controller was received by EES hired maintenance personnel and installed. Unfortunately, the controller did not work either and hope for use of the system was dropped.

Maintenance personnel since that time have looked at several alternatives for the Army in either repairing or replacing the disk drive system in FEED. We are not able to get quick service from AED in California, and a replacement controller for the disk drive could not be guaranteed to work. The estimated charges for hardware maintenance and parts during March was $15,000.00.

II. Budget

	Total	Expended	Month	%
Personal Services	$23,433	$22,707	$4,138	97%
Fringe Benefits	4,095	3,905	655	95%
Materials & Supplies	$12,500	9,042	7,474	72%
Travel	3,000	2,288	705	76%
Overhead	20,438	17,813	6,123	87%
Total	$63,466	$55,755	$19,097	88%

Monthly Progress Report

Project A-3309

For

April, 1983

Submitted By
Nickolas L. Faust
Georgia Institute of Technology
Engineering Experiment Station
Atlanta, Georgia 30332

May 16, 1983

I. Technical Progress

During April, EES coordinated efforts to get the FEED system repaired ASAP. IMCAN, the EES hardware contractor, made visits to ETL several times during April and early May in an attempt to bring the disk system up with a different style controller.

While the installation of a different controller alternative met with some success and should be considered as a high priority, should the AED controller fail again, the development time for fully integrating the new controller with the FEED hardware and software precluded the installation of a new controller at this time.

By early May the AED controller was back at Fort Bragg, and installation was attempted. During this time EES was calling AED in California repeatedly to determine the timetable and cost of the repairs to the disk controller. We were unable to get a fixed time for repair until late in April. The only person at AED who could work on the disk controller was unavailable for a large portion of the time due to his learning of a different hardware system. Since we only had a one time repair of an out of date system, the company did not give us much priority.

Also during April, repairs were made to a power supply and other pieces of equipment in the FEED van by IMCAN.

EES, in response to a request from ETL, proposed a design for a box to be placed with the FEED van to prevent any miswiring of the line power into the FEED power system. Gauges will be provided to show the voltage of the generator system at power hookup time, and if the power is not within acceptable limits a warning will be displayed and the power will not be allowed to enter the FEED system. A regulator will be included to smooth out power spikes into the system.

II. Budget

	Total	Expended	Month	%
Personal Services	$23,433	$25,902	$ 3,195	111%
Fringe Benefits	4,095	4,552	647	111%
Materials & Supplies	12,500	22,759	13,716	182%
Travel	3,000	2,288	0	76%
Overhead	20,438	24,921	7,108	122%
Total	$63,466	$80,422	$24,666	127%

A-3309

Monthly Progress Report

Project A-3309

For

May, 1983

Submitted By
Nickolas L. Faust
Georgia Institute of Technology
Engineering Experiment Station
Atlanta, Georgia 30332

June 30, 1983

I. Technical Progress

During May a decision was made jointly by ETL and EES to return the FEED van to Washington, DC for repair by ROLM Corporation, the vendor who originally supplied the system. It was felt that ROLM stood the best chance of evaluating problems of the system as a whole and subsequently fixing those problems. The FEED system was delivered to Washington near the end of the month of May. The system originally was to be delivered to ROLM Corporation for analysis; however, ROLM had no source of outside power for the van and its contents, so FEED was delivered to ETL instead. Tests were initiated by ROLM on the CPU disk and Versatec.

EES has ordered the parts for a power isolator for the FEED system. Some of these parts have already been delivered while others have a long delivery time.

EES estimates that when all repair bills are in for repair of the FEED system through May, 1983 there will be a deficit in the budget of $5,000. If the additional amount for FEED repair of $40,000 is approved, EES will have $35,000 to finish out work for the year. Half of this amount would go for a hardware maintenance subcontract.

The $70,000 increment for extension of this contract has been put in a new contract A-3553; therefore, charges from this account will be transferred to A-3553.

II. Budget*

	Total	Expended	Month	%
Personal Services	$23,433	$29,886	$ 3,984	128%
Fringe Benefits	4,095	5,382	830	131%
Materials & Supplies	12,500	21,894	6,503	175%
Travel	3,000	2,470	182	82%
Overhead	20,438	28,146	3,225	138%
TOTALS	$63,466	$87,778	$14,724	138%

*Please note - Project A-3553 with $70,000 is an extension of this contract; therefore, overrun charges on this account will be charged to A-3553. The total amount in the FEED support budget is then

A-3309 A-3553 Expended

$63,466 + $70,000 - $8,778 = $45,688

However, many hardware repair costs are still outstanding.